



Published in final edited form as:

Lung Health Prof Mag. 2013 ; 4(1): 1–15.

CDC Perspective an a Dynamic Partnership to Improve the Surveillance of COPD at State and Local Levels

Janet B. Croft, PhD,

Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia

Wayne H. Giles, MD, MS,

Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia

Letitia R. Preslly-Cantrell, PhD,

Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia

Anne G. Wheaton, PhD

Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia

Abstract

The Centers for Disease Control and Prevention (CDC) has long recognized that its major constituents, the state and local health departments, have the primary role for targeting resources and efforts to prevent and control disease. However, state and local level information about disease burden may be more relevant to local and state decision-makers than national disease estimates. Until November 2012, there were no widely available state level prevalence estimates for chronic obstructive pulmonary disease (COPD) with the exception of a few states that had collected their own prevalence data.

Two federal agencies, the National Heart, Lung, and Blood Institute (NHLBI) at the National Institutes of Health and CDC, and the COPD Foundation came together in a dynamic partnership in 2009 through 2012 to provide state level data on the prevalence of COPD. That partnership resulted in the release of a historic 2012 report on the first state-specific prevalence of COPD for all states.¹ To understand the importance of this partnership and the resulting report, we must first describe the state-based Behavioral Risk Factor Surveillance System (BRFSS) and how such state-based data have been used in the past to develop public health priorities and programs.

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

What is the BRFSS?

The BRFSS is the largest telephone survey in the world. An annual sample of over 450,000 adult respondents, aged 18 years, are interviewed from randomly selected households in all 50 states and US territories. Established in 1984 by the CDC and implemented annually by state health departments, the BRFSS collects information on chronic diseases, health risk behaviors, preventive health practices, disability, demographic characteristics, and health care access. There is a standard core questionnaire that is used for respondents in every state across the US. Inserting new questions on the core questionnaire is a highly competitive process given the large number of health topics of interest to state and Federal public health professionals. State BRFSS coordinators as a collective group make the important decisions regarding which core questions to add or drop. In the 2011 survey of land-line and cellular telephone respondents, a new question on COPD prevalence was asked of all respondents.

In 2011, the COPD prevalence question was asked of 498,225 respondents in all 50 states and 39,038 respondents (representing an estimated 15 million US adults) reported having COPD.¹ Such information can be used by public health practitioners at state and local levels and by partners to identify and create awareness about the burden and risk factors for COPD. This information also can be used to track changes over time and provide guidance to promote and evaluate public health programs and policies. More information about the BRFSS, annual survey questionnaires, and access to public-use datasets and interactive programs are available at <http://www.cdc.gov/brfss>.

State-Specific Obesity Surveillance

Perhaps the best example of the role of BRFSS as a tool to raise public awareness about a disease or risk factor is obesity. It is well documented that the US population is plagued by an obesity epidemic. Individual and public health efforts are ongoing to control weight and prevent obesity and its impact on children and adults in terms of diabetes, hypertension, cardiovascular diseases, disability, and premature death. The implementation of evidence-based interventions such as school system policies regarding cafeteria foods, vending machine selections, and physical activity; restaurant menu labeling of caloric counts; and industry food labeling policies are now more evident, in part due to the epidemic. By the late 1990s, CDC had published national obesity data which showed that the prevalence of obesity had been increasing since the 1980s in the US population.² However, while obesity was recognized by federal agencies and the scientific and medical community as a serious public health problem,³ the public was much less aware a decade ago. The seminal publication of maps of the state-specific increases over time (1991, 1993, 1995, and 1998) in obesity prevalence⁴ by CDC in the Journal of the American Medical Association galvanized public health decision-makers and the media in the US at local, state, and national levels. They could now visualize the extent of the obesity prevalence and how that epidemic had been growing during the 1990s in their state. The geographic clustering of obesity in certain states and the rapidity of the increase in those populations influenced targeting of public health interventions and prevention efforts at school, community, state, and national levels.

History of the COPD survey questions

We suggest that, as with the obesity example, the absence of state-level data may have hindered public health prevention efforts for COPD. For many years, epidemiologists had suggested the need for questions on COPD for the BRFSS but there were few champions to highlight this topic with the state health departments. CDC scientists were invited to present on March 3, 2009, at an NHLBI workshop of the COPD Learn More Breathe Better network members. CDC discussed the urgent need for state-specific COPD prevalence data and used the BRFSS obesity map series to demonstrate how state-specific maps could call attention to an important public health issue to a variety of stakeholders. CDC discussed with network members how such state-specific prevalence data for COPD could result in maps such as Figure 1, which shows quartiles of COPD prevalence in 2011. This was a pivotal moment in gaining support from both NHLBI and the COPD Foundation to improve state surveillance of COPD. The NHLBI offered to collaborate with CDC through an interagency agreement to support states in implementing COPD questions in the BRFSS.

CDC immediately identified a question about COPD prevalence that had been implemented previously as a state-added question in the 2007 North Carolina BRFSS through collaboration between the North Carolina COPD Task Force and the North Carolina state health department. This question was “Have you ever been told by a doctor or health professional that you have chronic obstructive pulmonary disease (COPD), emphysema, or chronic bronchitis?”⁵ The 2007 North Carolina BRFSS also included a module of additional health care-related questions for respondents who reported having COPD.⁶ CDC selected five questions (Table 1) from this North Carolina module. Having questions that had been implemented previously in a state BRFSS survey and demonstrating sufficient stable state prevalence estimates for each question expedited the process for cognitive-testing and establishing credibility for these questions with BRFSS state coordinators.

Beginning in the summer of 2009, the COPD Foundation played a key role with their state and local constituents and later at the 2010 annual BRFSS conference in educating state BRFSS coordinators and state public health decision-makers about the importance of COPD as a major chronic disease and the need for state surveillance data. As a result, the state BRFSS coordinators added COPD as an annual core question for all respondents in all states and territories beginning in 2011.

Importance of the state-specific COPD data

The compilation of national CDC data on COPD reported by Mannino et al.⁷ is probably the most widely cited source of CDC statistics for this disease. The joint-agency report of state-specific prevalence data for 2011 now adds valuable information to the public health literature. Figure 1 shows the geographic distribution of COPD prevalence in 2011. Many of the same states in the highest quartile of COPD prevalence also have been identified in a recent CDC publication with the highest Medicare hospitalizations rates for COPD.⁸ In a time of limited public health resources, identification of these high-risk states provides justification for public health programs to target the first efforts for those populations with the greatest burden.

An additional value of the BRFSS COPD data is that with continued annual surveillance, survey years can be aggregated or combined to allow identification of local areas with the greatest burden within states much like our recent mapping of 1995–2006 Medicare hospitalization rates for COPD in health service areas within states.⁸ This mapping at local levels provides an even greater tool for creating awareness of high burden areas among the public, the media, and public health decision-makers. Because the BRFSS interviews over 450,000 respondents each year, aggregation of survey years will allow prevalence of COPD to be obtained for the first time in a surveillance system for American Indian and Asian populations, which make up smaller proportions of the US population and are frequently under-surveyed.

Table 1 shows that the overall age-adjusted prevalence of self-reported COPD was 6.0% in 2011. Among respondents with COPD who also completed the COPD module in 21 states, the District of Columbia, and Puerto Rico, over 71% reported having received a breathing test such as spirometry; however, the percentage varied in states and ranged from 57% in Puerto Rico to over 81% in Ohio and Nevada.¹ In addition, almost 39% of adults with COPD reported being a current smoker. These results suggest further opportunities for professional education about the evaluation, diagnosis, and management of COPD—consistent with current clinical practice guidelines.⁹

A public health role for physicians

Thus, physicians have an important role in not only using spirometry to diagnose airflow obstruction in patients with respiratory symptoms⁹ but in ensuring that those patients with obstruction are aware that they have COPD. In addition, given that smoking is the most important cause of COPD and many persons with COPD continue to smoke,¹ health care providers need to assess smoking status in all patients and provide or refer smokers to appropriate quit services (<http://www.smokefree.gov/>). By educating patients about their condition and providing evidence-based interventions such as tools for smoking cessation, chronic disease self management education and the appropriate use of medications, the health care provider can go a long way in improving the quality of life of patients with COPD.

References

1. Centers for Disease Control and Prevention. Chronic obstructive pulmonary disease among adults—United States, 2011. *MMWR*. 2012; 61(46):938–943. [PubMed: 23169314]
2. Flegal KM, Carroll MD, Kuczmarski RJ, Johnson CL. Overweight and obesity trends in the United States: prevalence and trends, 1960–1994. *Int J Obesity Relat Metab Disorders*. 1998; 22:39–47.
3. National Institutes of Health Consensus Development Panel on Health Implications of Obesity. Health implications of obesity. *Ann Intern Med*. 1985; 103:1073–1077. [PubMed: 4062128]
4. Mokdad AH, Serdula MK, Dietz WH, Bowman BA, Marks JS, Koplan JP. The spread of the obesity epidemic in the United States, 1991–1998. *JAMA*. 1999; 282:1519–1522. [PubMed: 10546690]
5. Brown DW, Pleasants R, Ohar JA, Kraft M, Donohue JF, Mannino DM, Liao W, Herrick H. Health related quality of life and chronic obstructive pulmonary disease in North Carolina. *N Am J Med Sci*. 2010; 2(2):60–65. [PubMed: 22624116]

6. Centers for Disease Control and Prevention. Chronic obstructive pulmonary disease and associated health care resource use—North Carolina, 2007 and 2009. *MMWR*. 2012; 61(8):143–146. [PubMed: 22377845]
7. Mannino DM, Homa DM, Akinbami LJ, Ford ES, Redd SC. Chronic obstructive pulmonary disease surveillance—United States, 1971–2000. *MMWR Surveillance Summaries*. 2002; 51(SS-6):1–16.
8. Holt JB, Zhang X, Presley Cantrell L, Croft JB. Geographic disparities in chronic obstructive pulmonary disease (COPD) hospitalization among Medicare beneficiaries in the United States. *Int J COPD*. 2011; 6:321–328.
9. Qaseem A, Wilt TJ, Weinberger SE, Hanania NA, Criner G, Van der Molen T, Marciniuk DD, Denberg T, Schunemann H, Wedzicha W, MacDonald R, Shekelle P. Diagnosis and management of stable chronic obstructive pulmonary disease: a clinical practice guideline update from the American College of Physicians, American College of Chest Physicians, American Thoracic Society, and European Respiratory Society. *Annals Intern Med*. 2011; 155:179–191.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

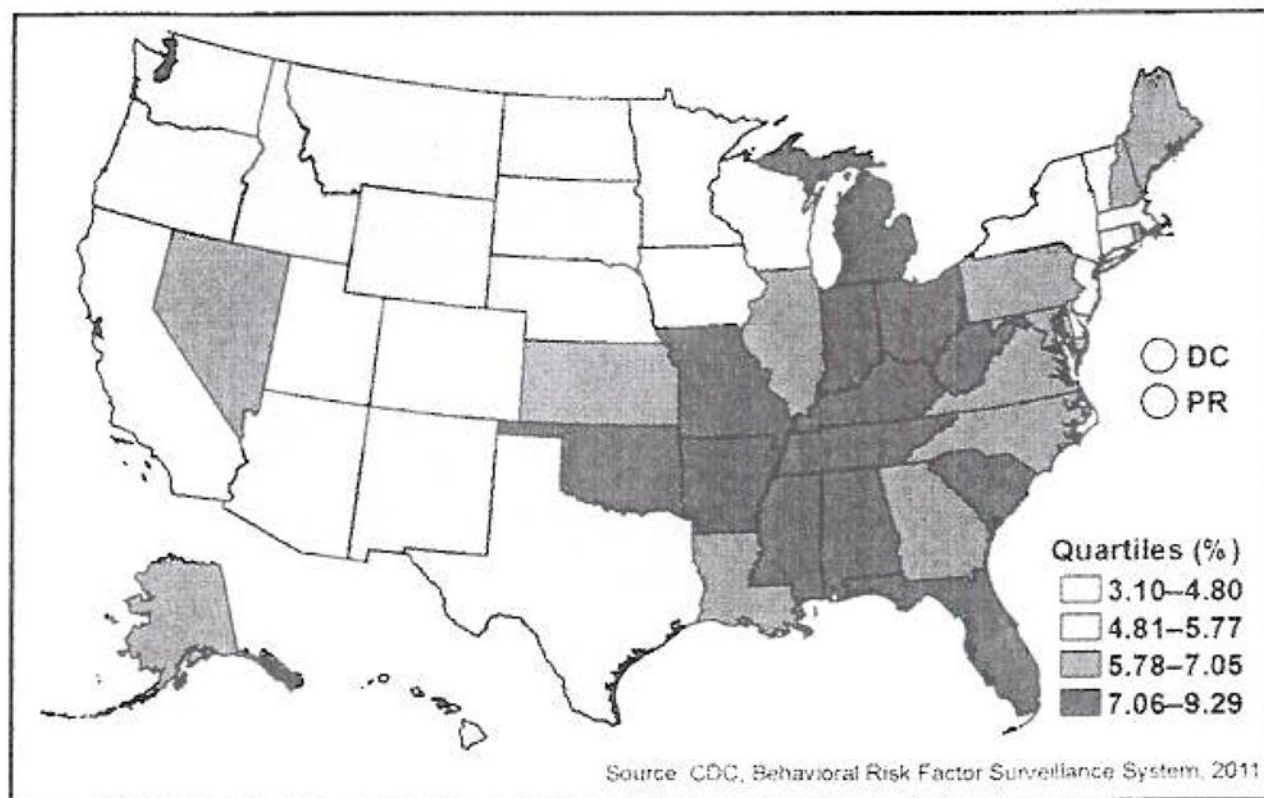


Figure 1.
State-specific age-adjusted prevalence of self-reported chronic obstructive pulmonary disease among adults aged 18 years, by quartiles: Behavioral Risk Factor Surveillance System, 2011

Table 1

Age-adjusted responses to the 2011 BRFSS questions

Action Steps	Number of Respondents *	Percent (%) "Yes"
Has a doctor, nurse, or other health professional EVER told you that you had any of the following [general health conditions]: Ever told you have (COPD) chronic obstructive pulmonary disease, emphysema, or chronic bronchitis? **	498,225	6.0
Have you ever smoked at least 100 cigarettes in your entire life?	39,038	75.1
Do you now smoke cigarettes every day [or] some days?	39,038	38.7
Earlier you said that you had been diagnosed with chronic obstructive pulmonary disease (COPD). Have you ever been given a breathing test to diagnose your COPD, chronic bronchitis, or emphysema? **	13,306	71.4
Would you say that shortness of breath affects the quality of your life? **	13,290	62.5
Other than a routine visit, have you had to see a doctor in the past 12 months for symptoms related to shortness of breath, bronchitis, or other COPD, or emphysema flare? **	13,284	41.5
Did you have to visit an emergency room or be admitted to the hospital in the past 12 months because of your COPD, chronic bronchitis, or emphysema? **	13,279	18.6
How many different medications do you currently take each day to help with your COPD, chronic bronchitis, or emphysema? ***	13,275	50.8

* The initial COPD question was asked of all 498,225 BRFSS respondents in 50 states, the District of Columbia, and Puerto Rico. There were 39,038 who were defined as having COPD based on their response. Among those 39,038 responding that they had been told that they had COPD, a sample of respondents in 21 states, the District of Columbia, and Puerto Rico responded to the additional five module questions.

** Possible response categories included "yes," "no," "don't know/not sure," or "refused." For the analyses in the report and above, respondents who refused to respond were excluded from the number of respondents in the denominator.

*** Possible response categories were a number, "don't know/not sure," "none," or "refused." For the analyses in the report and above, those answering a number other than "none" were categorized as "at least one daily COPD medication" and respondents who refused to respond were excluded from the number of respondents in the denominator.